Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Third Periodic Review of the	)	MM Docket No. 07-91
Commission's Rules and Policies	)	
Affecting the Conversion	)	
To Digital Television	)	
	)	
	)	

COMMENTS OF JOSEPH M. DAVIS, P.E.

Introduction

The following comments are provided by Joseph M. Davis, P.E., a consulting engineer who has been involved in the digital television transition since 1996. Mr. Davis provides consulting services to television stations in regard to the FCC's technical requirements concerning digital television station authorization, facility expansion, use of alternate channels, channel election matters including conflict resolution, and evaluation of the FCC's proposed final digital allotment table. The undersigned has prepared numerous applications for digital television station construction permit including early experimental operations and the first routine "checklist" and "non-checklist" (expansion) applications[1] granted by the FCC. Mr. Davis is currently president of the consulting firm *Chesapeake RF Consultants LLC* and is a member and past president of the Association of Federal Communications Consulting Engineers (AFCCE).

The subject NPRM in MM Docket 07-91 addresses many important topics that are critical to the latter stages of the digital transition and sets the stage for implementing final digital television station facility parameters.

[1]BPEXT-19960507KE, BPCDT-19970821KE (Public Notice MM 97-14), BPCDT-19970808KF.

Application Processing

Many stations are changing channel and will need to submit construction permit applications to obtain authorization for digital operation on their final channels. Two categories of construction permit applications are described in the NPRM [92-99]. Station proposals that do not expand their service areas would be accepted initially and processed quickly without the need for interference analysis. The NPRM proposes that expansion proposals would not initially be accepted.

The undersigned agrees that grants of proposals which conform to the Appendix B (Seventh FNPRM in MB Docket 87-268) allotment parameters will be needed quickly. A maximum site distance from the allotment reference site is recommended in order to help minimize interference to first-adjacent operations (similar to the 5 km specified in §73.622(d) for "checklist" transitional facilities), otherwise some stations could move their transmitter a large distance without having to comply with the interference requirements.

It is recommended that those stations changing channels be provided with flexibility regarding their hypothetical directional patterns (which are part of the allotment parameters) to allow use of a practical antenna. Otherwise the overall power may have to be reduced remarkably in some cases to fit within the allotment. This will result in an overall reduction in service to the public. The directional antenna patterns contained in the proposed allotment table correspond somewhat to the patterns associated with the transitional digital channel, but it is widely known that they have become distorted with the FCC's "carry over" procedure to the final channel due to the impact of non-uniform terrain and differences in the propagation curves (UHF/VHF and F(50,50)/F(50,90)).

Accordingly, the undersigned urges the FCC to provide flexibility to allow for some variance associated with the hypothetical Appendix B directional patterns, while still being able to process applications quickly. The stations needing to change channel will need to finalize their plans for antenna design and construction, or have security in knowing that their existing antennas (in use on their analog channels now) can be employed without drastic power reduction. For example, a minor contour extension resulting from use of a practical directional antenna could be accepted if the expanded contour service area does not exceed say, 5 percent of the area of the Appendix B facility.

Other methods are possible, and the undersigned believes that such flexibility is necessary to expedite the final transition steps and to avoid a reduction in service to the public.

The second application category refers to those which clearly propose to expand service and would be evaluated based on the interference criteria. The NPRM proposes to accept those applications at a later date, and states that the FCC will consider the issue of expanded facilities only after all stations have had the opportunity to apply for a facility which conforms to Appendix B. It is not clear from the NPRM whether that later opportunity occur only after a brief period or a much longer interval.

Except for a 200 kW power cap, there was no "phased" acceptance regarding expansion applications for transitional digital facilities. The FCC is urged to accept expansion applications as soon as possible, as even with the flexibility as described above some stations will need to propose facilities requiring interference analysis due to practical antenna and siting considerations.[2]

Interference Criteria

The NPRM [100-112] proposes a 0.5 percent interference limit for post-transition applications which expand the service area beyond that of the allotted values. Continued use of FCC OET Bulletin 69 techniques is proposed, with year 2000 Census population data. As noted in the NPRM, this is stricter than the 2 percent allowance provided for transitional digital operations, but not as strict as the 0.1 percent tolerance provided in the channel election process. Additionally, analog, low power television, television translator, and Class A Television stations have been allowed a 0.5 percent interference limit towards digital television stations.

The undersigned is supportive of an interference limit of at least 0.5 percent. However the NPRM's "cap" which prohibits *any* increase if the existing level of interference caused is over 0.5 percent [107] would leave many stations with little or no opportunity to even make slight adjustments in their facilities which result in a contour extension.

[2]This problem is particularly acute for "singleton" analog stations (those stations authorized after April 3, 1997 which do not have a digital transitional channel), as these stations have not had the opportunity to pursue an expansion

The FCC's Appendix B table supplies a summary of the percentage interference each station would receive, but does not indicate the level of interference that each station would cause to other stations. As a sample, the undersigned has conducted interference studies pursuant to OET Bulletin 69 which examined all October, 2006 Appendix B digital allotments within 200 km of Washington, DC.[3] The attached **Table 1** provides a summary of the maximum interference caused by each station to any other allotment. The results show that of 61 stations studied, 41 already contribute over 0.5 percent interference to at least one other allotment, and would be affected by the proposed 0.5 percent interference cap. In other words, two thirds of these stations could be locked into their allotment parameters without opportunity to achieve an expanded facility.

The undersigned recommends that the proposed 0.5 percent interference cap not be incorporated. The NPRM [106] acknowledges that a 0.5 percent threshold is more consistent with the level of accuracy provided by OET Bulletin 69 analysis.

> NPRM Para 106, emphasis added: "*Our proposed requirement that interference from a DTV application for post-transition use not exceed 0.5 percent is the same requirement as we have used during the transition for analog TV stations protecting DTV stations. It can be viewed as a "no new interference" criteria when the amount of predicted interference is rounded to the nearest whole percent (i.e., any determination of less than 0.5 percent interference would be considered to be 0 percent, while an interference determination greater than 0.5 percent would round up to 1.0 percent.)* ***This level of rounding is more reflective of the accuracy of the interference prediction model than the 0.1 percent criterion."***

Thus, a cap prohibiting <u>*any*</u> new interference (not even 0.1 percent, according to footnote 208 of the NPRM) is overly aggressive considering the method's limitations. The potential for successive station modifications ratcheting up interference to another station in 0.5 percent steps could be eliminated by comparing the proposal's interference level to that of the Appendix B

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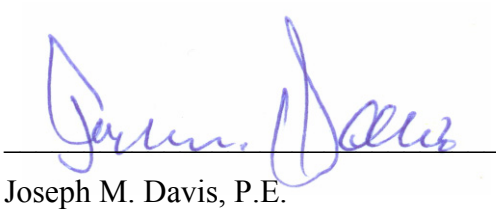
digital facility.

[3] FCC Office of Engineering and Technology Bulletin number 69, Longley-Rice Methodology for Evaluating TV Coverage and Interference, February 6, 2004 ("OET-69"). The implementation of OET-69 for this study followed the guidelines of OET-69 as specified therein. A standard cell size of 2 km was employed with 2000 Census data. Comparisons of various results of this computer program (run on a Sun Sparc processor) to the Commission's implementation of OET-69 show excellent correlation.

allotment. This is the same way compliance with the 2 percent interference limit was determined for transitional digital facility modifications.

Comments Submitted by:



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List of Attachments

Table 1 Interference Caused by Stations Within 200 km of Washington DC

Table 1

Summary of Interference Caused
Allotments Within 200 km of Washington, DC
Appendix B - Seventh FNPRM (MB Docket 87-268, October 2006)
MB Docket 07-91 Comments of Joseph M. Davis, P.E.

Chesapeake RF Consultants, LLC
Radiofrequency Consulting Engineers
Digital Television and Radio

			Proposed Final Digital Channel			
Call Sign	Location	Facility ID	Final Ch.	ERP (kW)	HAAT (m)	Maximum Interference Caused
WPVI-TV	PA PHILADELPHIA	8616	6	2.5	332	0.31% to Ch. 6 WEDY
WJLA-TV	DC WASHINGTON	1051	7	15.0	254	0.05% to Ch. 7 WHRE
WGAL	PA LANCASTER	53930	8	13.4	393	**1.06% to Ch. 8 WNJB**
WUSA	DC WASHINGTON	65593	9	17.0	254	**4.46% to Ch. 9 WBPH-TV**
WHTM-TV	PA HARRISBURG	72326	10	14.0	346	0.05% to Ch. 11 WBRE-TV
WBAL-TV	MD BALTIMORE	65696	11	6.9	312	0.44% to Ch. 11 WBRE-TV
WWPX	WV MARTINSBURG	23264	12	23.0	314	**0.98% to Ch. 12 WWBT**
WWBT	VA RICHMOND	30833	12	5.4	241	**2.35% to Ch. 12 WWPX**
WHYY-TV	DE WILMINGTON	72338	12	9.9	294	**0.77% to Ch. 12 WWPX**
WJZ-TV	MD BALTIMORE	25455	13	21.4	312	**1.59% to Ch. 13 WYOU**
WFDC-TV	VA ARLINGTON	69532	15	900.0	173	0.28% to Ch. 15 WPSU-TV
WPHL-TV	PA PHILADELPHIA	73879	17	237.1	354	0.11% to Ch. 17 WPXQ
WCAV	VA CHARLOTTESVILLE	363	19	50.0	326	0.08% to Ch. 20 WJPR
WVPY	VA FRONT ROYAL	66378	21	50.0	400	**2.10% to Ch. 21 WHP-TV**
WBOC-TV	MD SALISBURY	71218	21	635.0	279	**3.01% to Ch. 21 WVPY**
WHP-TV	PA HARRISBURG	72313	21	500.0	372	**5.69% to Ch. 21 WVPY**
WRIC-TV	VA PETERSBURG	74416	22	450.0	328	0.06% to Ch. 22 WCNC-TV
WLYH-TV	PA LANCASTER	23338	23	500.0	381	0.01% to Ch. 23 WPXJ-TV
WNVC	VA FAIRFAX	9999	24	50.0	215	0.07% to Ch. 24 WATM-TV
WTVR-TV	VA RICHMOND	57832	25	410.0	347	0.40% to Ch. 25 WUNC-TV
WTVE	PA READING	55305	25	900.0	395	**0.86% to Ch. 26 KYW-TV**
WHAG-TV	MD HAGERSTOWN	25045	26	574.6	359	**1.33% to Ch. 26 WRLH-TV**
WRLH-TV	VA RICHMOND	412	26	800.0	328	**5.07% to Ch. 26 WHAG-TV**
KYW-TV	PA PHILADELPHIA	25453	26	770.0	375	**35.01% to Ch. 25 WTVE**
WETA-TV	DC WASHINGTON	65670	27	90.0	254	**23.59% to Ch. 28 WFPT**
WGTW-TV	NJ BURLINGTON	7623	27	225.0	335	**0.65% to Ch. 27 WTBY-TV**
WFPT	MD FREDERICK	40626	28	30.0	159	**1.51% to Ch. 27 WETA-TV**
WCPB	MD SALISBURY	40618	28	76.7	157	**0.74% to Ch. 28 WFPT**
WMPB	MD BALTIMORE	65944	29	50.0	250	**6.54% to Ch. 28 WFPT**
WUVP-TV	NJ VINELAND	60560	29	225.0	396	**2.05% to Ch. 29 WFME-TV**
WNVT	VA GOLDVEIN	10019	30	160.0	229	**7.46% to Ch. 30 WGCB-TV**
WGCB-TV	PA RED LION	55350	30	50.0	177	**1.98% to Ch. 29 WMPB**
WPPX	DE WILMINGTON	51984	31	200.0	374	**3.77% to Ch. 31 WPXN-TV**
WVIR-TV	VA CHARLOTTESVILLE	70309	32	1000.0	368	**0.73% to Ch. 32 WTAJ-TV**
WPSG	PA PHILADELPHIA	12499	32	250.0	400	**1.67% to Ch. 32 WQPX**
WHUT-TV	DC WASHINGTON	27772	33	100.0	254	0.01% to Ch. 33 WNPB-TV
WPXW	VA MANASSAS	74091	34	1000.0	254	<0.01% to all
WCAU	PA PHILADELPHIA	63153	34	325.0	377	**0.51% to Ch. 33 WCBS-TV**
WDCA	DC WASHINGTON	51567	35	500.0	254	**19.06% to Ch. 34 WPXW**
WYBE	PA PHILADELPHIA	28480	35	358.0	377	**0.65% to Ch. 36 WNJU**
WTTG	DC WASHINGTON	22207	36	1000.0	235	**6.98% to Ch. 36 WITF-TV**
WITF-TV	PA HARRISBURG	73083	36	50.0	427	**0.63% to Ch. 36 WTTG**
WGPT	MD OAKLAND	40619	36	71.7	291	0.02% to Ch. 36 WTTG
WMAR-TV	MD BALTIMORE	59442	38	774.8	305	**0.63% to Ch. 38 WSWB**
WJAL	MD HAGERSTOWN	10259	39	82.5	394	0.06% to Ch. 39 WLVT-TV

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Call Sign	Location	Facility ID	Final Ch.	ERP (kW)	HAAT (m)	Maximum Interference Caused
WNUV	MD BALTIMORE	7933	40	845.0	373	**2.04% to Ch. 41 WUTB**
WUTB	MD BALTIMORE	60552	41	200.0	313	**0.80% to Ch. 41 WVIA-TV**
WMPT	MD ANNAPOLIS	65942	42	350.0	265	**3.20% to Ch. 41 WUTB**
WCVE-TV	VA RICHMOND	9987	42	160.0	346	**1.18% to Ch. 42 WRAY-TV**
WTXF-TV	PA PHILADELPHIA	51568	42	273.0	347	**5.98% to Ch. 43 WNJT**
WWPB	MD HAGERSTOWN	65943	44	209.0	359	<0.01% to all
WDPB	DE SEAFORD	72335	44	98.0	196	0.02% to Ch. 44 WMCN-TV
WCVW	VA RICHMOND	9989	44	100.0	328	**2.28% to Ch. 44 WWPB**
WBFF	MD BALTIMORE	10758	46	550.0	373	**5.52% to Ch. 47 WPMT**
WHTJ	VA CHARLOTTESVILLE	9990	46	340.0	332	**1.49% to Ch. 46 WBFF**
WPMT	PA YORK	10213	47	933.0	385	**2.11% to Ch. 46 WBFF**
WMDT	MD SALISBURY	16455	47	225.2	292	**10.92% to Ch. 47 WPMT**
WUPV	VA ASHLAND	10897	47	1000.0	249	**1.86% to Ch. 46 WHTJ**
WRC-TV	DC WASHINGTON	47904	48	1000.0	237	0.31% to Ch. 49 WHSV-TV
WHSV-TV	VA HARRISONBURG	4688	49	65.0	638	0.04% to Ch. 49 WPCW
WDCW	DC WASHINGTON	30576	50	122.9	253	<0.01% to all